RESULTS FROM 5 YEARS OF HAZARD AND NEAR MISS REPORTING BY NURSING STUDENTS

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IDENTIFYING HAZARDS AND NEAR MISSES
In healthcare, a HAZARD is anything in the clinical environment that poses a risk for harm to a patient or provider.

Hazards are equivalent to risk factors.

Hazard is a “pre-close call”.
HAZARD - EXAMPLE

Compressed-air tubing with IV-type connector
Bone cement expiration date is “hidden” on the larger, unseen surfaces of the flat packaging.
HOW DO YOU CONTROL HAZARDS?

- CONTROL HAZARDS so that they cannot do any harm
- Use Hierarchy of Hazard Control from Engineering

Hierarchy of Hazard Control:

1. Eliminate Hazard
2. Guard Against Hazard
3. Train to Avoid Hazards
4. Warn Against Hazard

Columbia University, Wireless Informatics for Safe and Evidence-based (WISE) APN Care
CONTROLLING HAZARDS THROUGH HUMAN FACTORS ENGINEERING

- Code Cart drawer redesign
  - Nurses timed in retrieving 10 drugs from baseline and redesigned crash cart med drawer
BASELINE DRAWER ("LAUNDRY HAMPER")
Range = 2:43-3:58 min, Avg = 3:07 min

Note the multiple orientations
CODE CART DRAWER THIRD VERSION
AVG= 1:40 MIN

Note pale background
Note: Might improve if used labels for each spot
WHAT IS A NEAR MISS?

- Also known as CLOSE CALL
- An event or situation that did not produce patient injury, but only because of chance. This good fortune might reflect robustness of the patient (e.g., a patient with penicillin allergy receives penicillin, but has no reaction) or a fortuitous, timely intervention (e.g., a nurse happens to realize that a physician wrote an order in the wrong chart). (AHRQ)
- Unplanned vs. planned interventions
Near misses are 10-100 times more common than human error.

Noting near misses and dealing with them is a marker for a culture of safety.

People are more willing to analyze and delve into near misses (perhaps because of less shame?)
Potential adverse events

Policy writing, training
Standardizing, simplifying
Automation
Improvements to devices, architecture

Patient
NEAR MISS EXAMPLES

- Transfusion “Slip” – H.S. Kaplan
- MRIs and sandbags – NJ DHHS
1. Couple placed in adjacent trauma bay beds post car accident
2. Both type and cross-matched for transfusion
3. Stickers placed on wrong tubes
4. Transfusion ordered for wife who had received a transfusion on a prior admission
5. Laboratory technologist noticed change in blood type and called ER where blood was re-drawn
6. Consequently, the patient did not receive the wrong blood
MRI AND “SANDBAGS”

- Patient post-operative cardiac catheterization had sandbag placed on groin per protocol
- Emergency MRI
- Bag moved from groin and adhered to rim of MRI machine
- Patient was removed without injury
- Analysis revealed that sandbags filled with metal shots, not sand
MRI SAFETY
AVOIDABLE CONFUSION IS EVERYWHERE

- Tropicamide Ophthalmic Solution USP, 1%
  - Rx only
  - 15 mL

- Cyclopentolate Hydrochloride Ophthalmic Solution USP, 1%
  - Rx only
  - 15 mL
DEMONSTRATION: THE STROOP TEST
STATE THE COLORS IN EACH ROW

Row 1

Row 2

Row 3

http://www.snre.umich.edu/eplab/demos/st0/stroopdesc.html
NOW, STATE THE COLOR OF THE TEXT AS FAST AS YOU CAN...

<table>
<thead>
<tr>
<th>Row 1</th>
<th>Red</th>
<th>Blue</th>
<th>Green</th>
<th>Yellow</th>
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</thead>
<tbody>
<tr>
<td>Row 2</td>
<td>Yellow</td>
<td>Green</td>
<td>Blue</td>
<td>Red</td>
</tr>
<tr>
<td>Row 3</td>
<td>Green</td>
<td>Red</td>
<td>Yellow</td>
<td>Blue</td>
</tr>
</tbody>
</table>
AGAIN, STATE THE COLOR OF THE TEXT AS FAST AS YOU CAN...

<p>| | | | | |</p>
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<tbody>
<tr>
<td>Row 1</td>
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<tr>
<td>Row 3</td>
<td>Green</td>
<td>Red</td>
<td>Yellow</td>
<td>Blue</td>
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HAZARD AND NEAR MISS (H & NM) REPORTING

• Reporting of errors is a professional responsibility

• Taught definitions of:
  • Adverse events
  • Hazards
  • Near misses

The importance of reporting near misses

• Required to report near misses and adverse events to their preceptor and faculty

• The Hazard and Near Miss Reporting System is designed for students to enter data for each shift that they work
Patient Safety Assessment and Reporting
For Data Entry

- Hazard and Near Miss Reporting System
- Fall-Injury Risk Assessment
Welcome Suzanne Balken to the Hazard and Near Miss Reporting System!

Date of Shift:
Month □ Day □ Year □

Question 1:
On your shift today, were there any "dangerous situations" that could cause a future event?

- Accident (Injury) [Info]
- Environmental Hazard/Safety [Info]
- Equipment/Device [Info]
- Fall [Info]
- Food/Nutrition [Info]
- Infection [Info]
- Laboratory [Info]
- Medication [Info]
- Patient Disappearance [Info]
- Procedure/Treatment [Info]
### EVENT CATEGORIES

<table>
<thead>
<tr>
<th>Event Categories</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident (non-fall)</td>
<td>Needle stick, electrical shock, burn, poisoning</td>
</tr>
<tr>
<td>Environmental Hazard/Safety</td>
<td>Body fluid exposure, chemical exposure, chemotherapy spill, hazardous material spill</td>
</tr>
<tr>
<td>Equipment/Device</td>
<td>Equipment malfunction, poor maintenance, inappropriate use, non-availability</td>
</tr>
<tr>
<td>Fall</td>
<td>Factors related to the individual or the environment</td>
</tr>
<tr>
<td>Food/Nutrition*</td>
<td>Diet and NPO orders</td>
</tr>
<tr>
<td>Infection*</td>
<td>Sterile precautions, hand washing</td>
</tr>
<tr>
<td>Laboratory</td>
<td>Laboratory orders or results</td>
</tr>
<tr>
<td>Medication</td>
<td>Prescribing, ordering/documenting, administering, monitoring</td>
</tr>
<tr>
<td>Patient Disappearance</td>
<td>Increase risk of patient disappearance</td>
</tr>
<tr>
<td>Procedure/Treatment</td>
<td>Consents, delays, wrong procedure/treatment, failure to perform</td>
</tr>
<tr>
<td>Restraint</td>
<td>Improper bedrail use and other types of restraint use</td>
</tr>
<tr>
<td>Transfusion</td>
<td>Sample collection or product administration</td>
</tr>
<tr>
<td>Other</td>
<td>Another type of risk</td>
</tr>
</tbody>
</table>

* Added to existing event categories in local electronic reporting system
Question 2:
On your shift today, were there any near misses (i.e., events that almost happened)?
HAZARD AND NEAR MISS REPORTING: RESULTS FROM 5 YEARS

- 845 entry to practice nursing students
- 3 - 25 week periods - Sept - March
- 2 clinical days per week
- Medical-surgical, pediatric, psychiatric, obstetrics and community settings
H & NM EVENTS REPORTED

- 76,143 reports --> 20,925 ‘Yes’ answers
- 13,221 hazards
- 7,704 near misses
  + 2,330 - planned interceptions
  + 2,535 - unplanned interceptions
MOST FREQUENT CATEGORIES (%) OF HAZARDS AND NEAR MISSES

- Infection
- Medication
- Environmental Hazard/Safety
- Falls
TOTAL NUMBER OF H&NM BY ROTATION

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Hazards</th>
<th>Near Misses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Med-Surg</td>
<td>3000</td>
<td>1500</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>2900</td>
<td>1400</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>2800</td>
<td>1300</td>
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<tr>
<td>Community</td>
<td>2700</td>
<td>1200</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>2600</td>
<td>1100</td>
</tr>
</tbody>
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STUDENT RATINGS OF THE SYSTEM

- Good Idea
- Learnability
- Easy to Use

2009; N=162
2010; N=193
2011; N=141
2012; N=170
STUDENT RATINGS OF THE SYSTEM (CONT.)

Useful Mindefulness Intention to Use Overall Satisfaction

2009 2010 2011 2012
RELEVANCE OF HZNMRs TO CLINICAL ROTATION
1 - NOT RELEVANT; 5 VERY RELEVANT

Psychiatry  Pediatrics  OB  Med-Surg  Community

2009  2010  2011  2012
PROPORTION OF YOUR SHIFTS RECOMMEND FOR USE
1 = ALL OF MY SHIFTS; 5 = NONE OF MY SHIFTS

Shifts

2009
2010
2011
2012
WHERE WOULD YOU SEE THE HZNMRS FITTING INTO YOUR NURSING PRACTICE?
ACKNOWLEDGEMENTS

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The WISE APN team and the CUSON students